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Brief

September 2002

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## Paraguay

*Paraguay has no known oil or gas reserves but is a major producer and exporter of hydroelectric power. Paraguay is part of the Southern Cone and a member of MERCOSUR, the Southern Common Market.*

*Note: Information contained in this report is the best available as of September 2002 and can change.*



## BACKGROUND

The Republic of Paraguay plays an important role in the economies of neighboring MERCOSUR members, Brazil and Argentina. Paraguay's two large hydroelectric plants, Itaipu and Yacyreta, meet approximately 25% of Brazilian electricity demand and 40% of Argentine electricity demand respectively. Paraguay also exports soybeans and cotton to its neighbors and many Paraguayans work outside of the country, sending their

remittances home. Accordingly, Paraguay's economy is highly sensitive to regional trends. For instance, Argentina's financial crisis, has adversely affected Paraguayan economic growth. Paraguay's real gross domestic product (GDP) grew by only 1.0% in 2001 and is expected to grow by 1.8% in 2002.

Paraguay's President, Luiz Gonzalez Macchi, has been in office since March 1999. President Macchi (formerly President of the Chamber of Senators) constitutionally succeeded Raul Cubas Grau, who had resigned. The country is scheduled to hold Presidential elections on April 27, 2003.

## OIL

Oil accounted for slightly less than half of Paraguay's total energy consumption in 2000, with the balance attributed to hydropower. The country

relies entirely on imports to meet its crude oil demand, which totaled 29,000 barrels per day (bbl/d) in 2001, a 48% increase since 1991.

Imported crude oil comes primarily from Argentina's Palmar Largo field in Formosa Province and is processed at the country's sole refinery, Villa Elisa. Crude oil trade between Paraguay and Argentina began in October of 1998, when Petroleos Paraguayos (Petropar, the state oil company) began to purchase its crude oil exclusively from Argentina. Prior to 1998, Paraguay imported oil from Algeria, as that country's generally lighter crude was well suited to the Villa Elisa refinery.

To-date, no oil has been discovered in Paraguay. There has been some exploration by both local and North American companies, encouraged by the discovery in 1984 of substantial deposits in the Argentine province of Formosa, close to the Paraguayan border, and by exploration in the Bolivian Chaco.

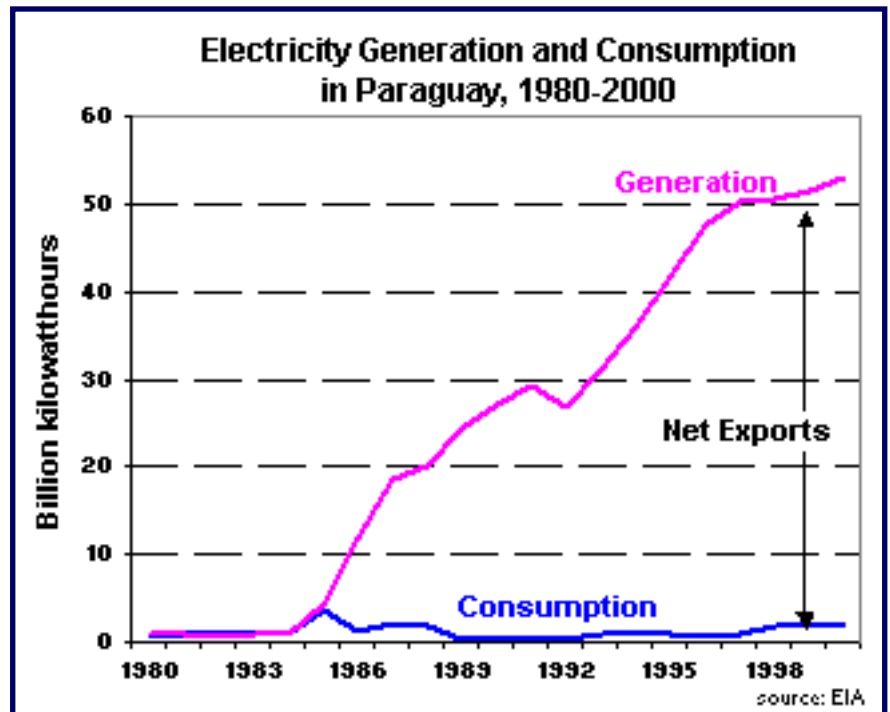
## **NATURAL GAS**

Although Paraguay neither consumes nor produces natural gas, the country could become a transit point for Bolivian natural gas in the near future. In March 2002, the Foreign Ministers of Paraguay and Bolivia signed a preliminary agreement regarding the construction of a pipeline to transport Bolivian natural gas to Brazil via Paraguay. Construction of the pipeline, known as the Integration Gas Pipeline (GASIN), is scheduled to begin in 2003, with completion anticipated in 2005. The pipeline will stretch 3,300 miles, through Bolivia, Argentina, and Paraguay en route to Brazil, which is currently experiencing a crippling energy shortage. Securing access to Bolivian natural gas could also allow Paraguay to incorporate natural gas into its national fuel mix, which currently relies heavily upon hydroelectric generation and imported petroleum.

## **ELECTRICITY**

Paraguay is a co-owner of two of the world's largest hydroelectric dams. The Itaipu hydroelectric power plant, located on the Parana River along the country's border with Brazil, supplies 95% of Paraguay's relatively tiny electricity demand. The remainder of Paraguay's electricity needs are supplied primarily by the Yacyreta hydroelectric power plant,

located on the southern border with Argentina. Accordingly, Paraguay is a significant net electricity exporter. In 2000, Paraguay exported approximately 49.5 billion kilowatthours (bkwh) of electricity, approximately 90% of its national electricity generation.



Itaipu, the world's largest hydroelectric dam, was completed in 1982 and has 18 functional 700-megawatt (MW) turbines, which combined constitute a total installed capacity of 12,600 MW. The plant is jointly owned and operated by Paraguay and Brazil, which divide Itaipu's electricity generation evenly, according to the 1973 Treaty of Itaipu. In 2001, a prolonged drought caused production at Itaipu to decline by almost 15%. Itaipu produced 79 million megawatt-hours (MWh) in 2001, compared to 93 million MWh in 2000.

Paraguay has plans to add two more 700-MW units to Itaipu's existing 18 units. The first should begin service in 2003, while the second is expected to follow in 2004. The project will increase peaking capacity of the Itaipu station to help meet demands on the Brazilian and Paraguayan grids. It also will allow maintenance outages to be performed on two units at a time, while keeping 18 units operating year-round.

Paraguay's other major power plant, the Yacyreta hydroelectric plant, is equipped with 20 turbines and has an installed capacity of 3,200 MW. Paraguay and co-owner Argentina share the electricity generated at Yacyreta evenly, with most of Paraguay's electricity being exported to Argentina. Paraguay and Argentina signed the Treaty of Yacyreta in 1973, but the project suffered numerous delays, and the initial phase of construction was not completed until September of 1994. The twentieth turbine was finally set in motion at Yacyreta in July 1989.

Paraguay and Argentina are planning to build another hydroelectric dam on the Paraná, the 3,000-MW Corpus Critsi dam. The dam would be built about 124 miles upstream from Yacyreta. In May 2000, Paraguayan Foreign Minister Juan Esteban Aguirre and Argentine Foreign Minister Adalberto Rodríguez Giavarini signed a working agreement concerning Corpus Cristi. The agreement calls for constructing the dam through international public bidding, and assures that the project's construction will be environmentally sound. There has been considerable opposition to the project among the local community and among environmentalists.

## **COUNTRY OVERVIEW**

**President:** Luis González Macchi (since March 1999)

**Independence:** May 14, 1811 (from Spain)

**Population (2001E):** 5.7 million

**Location/Size:** Central South America, northeast of Argentina/157,000 square miles - slightly smaller than California

**Capital:** Asunción

**Languages:** Spanish (official), Guaraní

**Ethnic Groups:** Mestizo (mixed Spanish and Indian) 95%, white and Amerindian 5%

**Religion:** Roman Catholic 90%, Mennonite and other Protestant denominations 10%

**Defense (8/97):** Army: 14,900; Navy: 3,600, including 900 Marines; Air Force: 1,700; paramilitary police force: 14,800



## **ECONOMIC OVERVIEW**

**Currency:** Guarani

**Market Exchange Rate (9/18/02):** US\$1=6,385.60 Guaranis

**Gross Domestic Product (2001E):** \$7.4 billion

**Real GDP Growth Rate (2001E):** 1.0% **(2002F):** 1.8%

**Inflation Rate (2001E):** 6.8% **(2002F):** 7.3%

**Current Account Balance (2001E):** -\$220.2 million (-3% of GDP)

**Foreign Reserves (2001E):** \$713.5 million

**Foreign Debt (2001E):** \$3.32 billion

**Major Export Products:** Hydroelectricity, cotton, soybeans, meat products

**Major Export Destinations:** Brazil, Argentina, Uruguay

**Major Import Products:** Consumer goods, intermediate goods, capital goods, fuels

**Main Origins of Imports:** Brazil, Argentina, Uruguay

## **ENERGY OVERVIEW**

**Minister of Interior:** Victor Hermoza Sagaz

**Oil Production:** None

**Oil Consumption (2001E):** 29,000 barrels per day (bbl/d)

**Crude Oil Refining Capacity (12/24/01):** 7,500 bbl/d

**Natural Gas Production/Consumption:** None

**Coal Consumption (2000E):** 70,000 short tons (all imported)

**Electricity Generation Capacity (2000E):** 7.4 gigawatts, of which 99.5% was hydroelectric

**Electricity Generation (2000E):** 51.5 billion kilowatthours (bkwh)

**Electricity Consumption (2000E):** 2.0 bkwh

**Electricity Net Exports (2000E):** 49.5 bkwh

## **ENVIRONMENTAL OVERVIEW**

**Minister of Agriculture & Livestock:** Enrique Zuniga

**Total Energy Consumption (2000E):** 1.1 quadrillion Btu\* (<0.1% of world total energy consumption)

**Energy-Related Carbon Emissions (2000E):** 1.0 million metric tons of

carbon (<0.1% of world total carbon emissions)

**Per Capita Energy Consumption (2000E):** 21.3 million Btu (vs. U.S. value of 351.0 million Btu)

**Per Capita Carbon Emissions (2000E):** 0.20 metric tons of carbon (vs. U.S. value of 5.6 metric tons of carbon)

**Energy Intensity (2000E):** 12,552 Btu/\$1995 (vs U.S. value of 10,918 Btu/\$1995)\*\*

**Carbon Intensity (2000E):** 0.12 metric tons of carbon/thousand \$1995 (vs U.S. value of 0.17 metric tons/thousand \$1995)\*\*

**Sectoral Share of Energy Consumption (1998E):** Residential (39.4%), Industrial (37.9%), Commercial (13.5%), Transportation (9.2%)

**Sectoral Share of Carbon Emissions (1998E):** Transportation (90.2%), Residential (6.4%), Industrial (3.4%), Commercial (0.0%)

**Fuel Share of Energy Consumption (2000E):** Oil (48.5%), Coal (1.3%), Natural Gas (0.0%)

**Fuel Share of Carbon Emissions (2000E):** Oil (96.5%), Coal (3.5%), Natural Gas (0.0%)

**Renewable Energy Consumption (1998E):** 627 trillion Btu\* (0% increase from 1997)

**Number of People per Motor Vehicle (1998):** 41.7 (vs. U.S. value of 1.3)

**Status in Climate Change Negotiations:** Non-Annex I country under the United Nations Framework Convention on Climate Change (ratified February 24th, 1994). Paraguay ratified the Kyoto Protocol on August 25th, 1999.

**Major Environmental Issues:** Deforestation (an estimated 2 million hectares of forest land have been lost from 1958-85); water pollution; inadequate means for waste disposal present health risks for many urban residents.

**Major International Environmental Agreements:** A party to Conventions on Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Ozone Layer Protection and Wetlands. Has signed, but not ratified, the Nuclear Test Ban.

\* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International

Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.

**\*\*GDP based on EIA International Energy Annual 2000**

## **ENERGY INDUSTRY**

**Organization:** *Oil refining* - Petroleos Paraguayos (Petropar, the state oil refinery) ; *Electric power* - Administracion Nacional de Electricidad (ANDE), the state electricity corporation

**Port:** Asunción

**Major Oil-Producing Fields:** none

**Refinery (12/24/01 Capacity):** Petroleos Paraguayos - Villa Elisa (7,500 bbl/d)

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*Sources for this report include: BBC; CIA World Factbook 2001; Dow Jones; DRI-WEFA; Economist Intelligence Unit ViewsWire; Financial Times; IMF; Janet Matthews New Services; Latin America Monitor; New York Times; Oil and Gas Journal; U.S. Energy Information Administration; Wood Mackenzie.*

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## **LINKS**

For more information from EIA on Paraguay, please see:

[EIA - Country Information on Paraguay](#)

Links to other U.S. government sites:

[CIA World Factbook - Paraguay](#)

[U.S. State Department Background Notes: Paraguay](#)

[Paraguay - U.S. State Department - Consular Information Sheet](#)

[U.S. Department of Commerce -- U.S. Trade with Paraguay in 1998](#)



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[LatinWorld's section on Paraguay](#)

[The Latin American Integration Association \(ALADI\)](#)

[ARPEL, Regional Association of Oil and Natural Gas Companies in Latin America and the Caribbean](#)

[The Regional Electric Integration Commission \(CIER\)](#)

[Paraguay Information](#)

[Ciber Centro - Paraguay](#)

[Latin American Gas online news](#)

[International Energy Association Information on Paraguay](#)

[La Nacion - Paraguay daily newspaper in Spanish](#)

[University of Texas, LANIC \(Latin American Network Information Center\) - Paraguay](#)

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